Application Number	Application for (a-urban, b-agriculture, c-DWR/WUE:
154	a) Prop 13 Urban Water Conservation

Principle Applicant(Organization/Affiliation)

Pittsburg, City of

Project Title

Irrigation Automation Project

First Name-Authorized	Last Name (AA):	Title
Donald	Buchanan	Superintendent

Street Address	PO Box
65 Civic Center Ave.	
City	State
Pittsburg	Ca
Zip Code	Telephone Number(Include Area Code)
94565	(925) 252-4014
Fax Number (Include Area Code)	E-mail Address
(925) 439-4036	dbuchanan@ci.pittsburg.ca.us

First Name-Contact Per	Last Name-CP:	Contact-Title
Roger	Stromgren	Supervisor

Contact-Street Address	Contact-PO Box
65 Civic Ave.	
Contact-City	Contact-State
Pittsburg	Ca
Contact-Zip Code	Contact-Phone Number
94565	(925) 252-4025
Contact-Fax Number	Contact-E-Mail Address
(925) 436-4036	rstromgren@ci.pittsburg.ca.us

Funds Requested (dollar amount	Applicant Funds Pledged (dollar amount	Total Project Costs (dollar amou
$282,700.00	$8,000.00	$290,700.00

Estimated Total Quantifiable Project Benefits (dollar amount	Percentage of Benefits to be Accrued by App
$378,700.00	1
Percentage of Benefits to be Accrued by CALFED or othe	Estimated Annual Water to be Saved (acre-fe
0	41
Estimated Total Amount of Water to be Saved (acre-fee	Over _____ Number of Years
287	7

Estimated Benefits to be Realized (terms of water qual,instream

$378,700 Water/labor reduced runoff, water quality

Duration of Project (month/year-month/year):	State-Wide
10/02-10/03	☐

State Assembly District-location of project(	11	State Senate District-location of project(1	7
State Assembly District-location of project(		State Senate District-location of project(2	
State Assembly District-location of project(		State Senate District-location of project(3	
State Assembly District-location of project(		State Senate District-location of project(4	
State Assembly District-location of project(		State Senate District-location of project(5	
State Assembly District-location of project(		State Senate District-location of project(6	
State Assembly District-location of project(		State Senate District-location of project(7	
State Assembly District-location of project(		State Senate District-location of project(8	
State Assembly District-location of project(		State Senate District-location of project(9	
State Assembly District-location of project(		State Senate District-location of project(10	

Congressional District(s)-location of project	7	Congressional District(s)-location of project(	
Congressional District(s)-location of project		Congressional District(s)-location of project(	
Congressional District(s)-location of project		Congressional District(s)-location of project(	
Congressional District(s)-location of project		Congressional District(s)-location of project(	
Congressional District(s)-location of project		Congressional District(s)-location of project(1	

County-location of project	Most recent Urban Water Mgt Plan Submitt
Contra Costa	12/31/2000

Type Applicant-Urban(a)Agricl Feas Study(b) Gra	DWR WUE Projects	Project Focus
a) City		b) Urban

Project Type:

a) Implementation of Urban Best Management Practices

Quantifable Objectives

Specify from choice (d) above

Specify from (k) above

Does Proposal involve change in land use (planned/future)ICheck box if yes

☐

Consolidated Water Use Efficiency 2002
Proposition 13 Urban Water Conservation Program
City of Pittsburg- Proposal Part II

Project Summary

Pittsburg ("the City") is a community of 55,000 people in Eastern Contra Costa County. The City owns and maintains 378 acres of parks and landscaped areas. The Irrigation Automation Project would upgrade the manual irrigation control system to an automated control system at 19 parks and landscaped areas covering 133.3 acres.

The goals of this project are to: 1) measure and monitor irrigation at the most heavily used parks and landscaped areas; 2) reduce the use of treated water for irrigation; 3) reduce runoff into storm drains and the Sacramento-San Joaquin River Delta; 4) make more efficient the adjustment for climactic conditions, such as wind, rain and temperature fluctuations; 5) improve training for personnel in conservation measures; 6) detect unscheduled flows and shut down the system through the master valve.

The City aims to achieve these goals through installation of flow censors controlled by a central computer.

The City purchases raw water from the Contra Costa Water District and treats it at a city-operated Water Treatment Plant. The cost to the City for this treated water is calculated at $910 per acre-foot, or $2,793 per million gallons.

Since the City is its own water purveyor, it does not bill the Park Maintenance division for water it consumes. Water flows unmetered through more than 200 manually operated irrigation controllers at parks, medians and landscaped areas outside public buildings.

The process of adjusting the manual controllers requires the re-assignment a landscape crew and vehicle for two full workdays, resulting in an annual additional labor cost of $16,674. Dedication of a crew for this purpose is not only expensive, it delays completion of critical repairs and maintenance tasks. When this is not possible, there is no adjustment made to controllers during brief periods (one week or less) of rain or cool weather.

What results is over-watered parks and medians, causing excessive runoff and limiting the use of turf areas by the public as they are often saturated.

Without a method of measuring actual flows through the current irrigation system, city personnel have estimated the volume of water used to irrigate the 19 locations in this project by the following method:

With an average water application per acre of 3,500 gallons per day on the 133.3 acres of this project over 144 watering days per year, water consumption is calculated at 67 million gallons per year. At $2,793 per million gallons, irrigation of these areas costs $187,000 annually.

The expected outcomes of this project are: water savings of 20%, or 13.4 million gallons in the first year ($37,426 in water costs saved), plus avoidance of $16,674 in labor costs. This $54,100 in avoided annual cost benefit for the City over a seven-year minimum life of the system totals $378,700.

The cost of this project is estimated at $290,700. The City will provide in-kind services such as staff training ($2,000), trenching ($6,000) supply contract management, supervision, staff overhead and the cost of monitoring and maintaining the system after installation. The amount requested in this application is $282,700.

A. Scope of Work - Relevance and Importance

1. Nature, Scope and Objectives of the Project

The proposed Irrigation Automation Project would upgrade the manual irrigation control system now utilized by the City of Pittsburg to an automated control system at 19 parks and landscaped areas covering 133.3 acres. The project area represents the most highly visible and heavily used parks and landscaped areas within the City's 378-acre system.

Since the City operates a Water Treatment Plant and acts as its own water purveyor, it does not track water use for irrigation of parks and landscaping it owns and maintains. Without meters or an efficient system to adjust for climatic conditions, the City estimates it consumes 67 million gallons of treated water for irrigation of parks and landscaping within the project area each year.

Goals of this project are to: 1) measure and monitor irrigation at the most heavily used parks and landscaped areas; 2) reduce the use of treated water for irrigation; 3) reduce runoff into storm drains and the Sacramento-San Joaquin River Delta; 4) make more efficient the adjustment for climactic conditions, such as wind, rain and temperature fluctuations; 5) improve training for personnel in conservation measures; 6) detect unscheduled flows and shut down the system through the master valve.

The City aims to achieve these goals through installation of flow censors controlled by a central computer.

2. Statement of Critical Need

Critical issues at the local, regional, Bay-Delta, state and federal levels center on water quality and water conservation. These in turn contribute to additional issues such as habitat preservation. Project objectives of reducing the amount of water used each year for irrigation, and runoff resulting from over-watering is consistent with the local and regional resource management plans.

Pittsburg has adopted a Storm Water Ordinance and Storm Water Management Plan to minimize runoff and reduce non-point source pollution to the Delta. The City is also a signatory on the Memorandum of Understanding with the California Urban Water Conservation Council.

The City's Urban Water Management Plan[1] includes Best Management Practices (BMP) for Large Landscape (dedicated landscape meters) on a voluntary implementation schedule of June 2001. While the City has fallen short of achieving this goal, installation of an automated irrigation system would provide a mechanism for the City to address this BMP at city facilities and will also provide a model for use in informing other large landscape users about water efficient systems. This will also

[1] adopted by City Council action November 20, 2000, submitted to California DWR December 2000

help develop landscape water audit skills in personnel, which when coupled with their current certification in residential water audits would provide enhanced capacity to address compliance with other Urban BMPs.

As regards polluted runoff, the State Water Resources Control Board (SWRQB) identifies runoff, or nonpoint source pollution, as the leading cause of water quality pollution in both California and the nation.[2] Among the most common of these pollutants are fertilizers, herbicides and insecticides, including some used in parks.

In 2000, the U.S. Environmental Protection Agency provided $10 million to the SWRQB to reduce nonpoint source pollution into inland and coastal waters. The State of California's Water Bond 2000 provided $22 million to combat polluted runoff.

The Sacramento-San Joaquin River Delta is a source of drinking water for millions of Californians, and good quality water is required to maintain the high quality habitat needed to support a diversity of fish and wildlife populations.[3] It is also the northern city limit for Pittsburg, and an important part of this City's history and economy for more than a century.

The Contra Costa Water District, which supplies raw water to the City of Pittsburg, urged its customers to conserve water in an October 2001 Public Advisory[4]. Citing poor water quality in the Delta, the District announced it had relied more heavily than expected on supplies held at the Los Vaqueros Reservoir.

High water use, and a relatively dry winter the previous year depleted the fresh water of the Delta and resulted in an earlier intrusion of salty Bay water into the Delta. Prior to the construction of Los Vaqueros, this meant higher sodium levels or saltiness in drinking water.

The District's alternate water supply may bring some relief for humans, but the effect of saltier water on Delta wildlife habitats and agriculture remain a source of study and monitoring for environmental regulators and interest groups.

This is a serious concern for the City as well, since it derives not only its drinking water from this source, but relies on the Delta as a recreational resource for its citizens and visitors.

Reducing the use of raw or treated water for irrigation not only saves the City money, it conserves a valuable resource and reduces runoff pollution to an important source of drinking water and recreation. Completion of the Irrigation Automation Project would also provide a model for other large landscape customers within the community, thereby generating further savings as these customers adopt the successful measures already at work in local parks.

---

[2] SWRCB *California Water News October 22, 2001*

[3] California Bay Delta Program *Primary Objectives*

[4] Contra Costa Water District, *Efficient Water Use Encouraged October 29, 2001*

B. Scope of Work: Technical / Scientific Merit, Feasibility, Monitoring and Assessment

Methods/procedures and facilities

The Irrigation Automation Project began with the identification of 19 parks and landscaped areas outside public buildings currently served by the City's manually controlled irrigation system. This system is unmetered in nearly all of these locations, making current water use nearly impossible to accurately assess.

These areas were chosen because they are heavily used by the public or are otherwise highly visible to the citizens of Pittsburg. They are developed areas where efficient and consistent irrigation is deemed necessary by the applicant.

After a competitive bidding process, the City would hire a skilled and experienced contractor, such as United Green Tech, to install an automated computerized irrigation control system at the city's Environmental Services Center, where Park and Landscape Maintenance operations are based.

The contractor would provide strategic system planning, software and hardware training for city staff, ongoing regional training seminars and technical support.

The automated system allows for continuous monitoring of all irrigation related functions, and permits manual or automated "shut downs" for rain, wind or other climatic changes. The system includes leak detection through flow meters with automatic shutdown at signs of unscheduled or abnormal flows.

This software also exports data to the city's existing computer software system, generating spread sheet charts of water use by location, by day, week, month, by plant type, and a host of other factors. This would permit landscape and turf supervisors to measure and review this data and adjust for maximum conservation of water.

The software includes a Weather Center where parameters are set for each microclimatic zone. Historic data entry for each month, and a percentage adjustment can be made for each month and allows for fine-tuning of weather adjustment. A weather calendar for each microclimate zone is tracked in a calendar.

The increased monitoring capability is critical to achieving program objectives. Data can be sorted by station (location) names, start times, peak water use due to climate, plant type or other factors. System data would be evaluated on an ongoing basis, with an annual review to determine further water conservation options.

The City has already received a bid and proposal for this project. It is anticipated the system would be installed, staff trained and system fully operational within 12 months of execution of the contact with the Department of Water Resources.

Task List and Schedule

Task	Due Date	Cost	Expense To Date
Negotiate Contract with DWR	October 1, 2002		
Project to Bid	October 1, 2002		
Contractor Hired	November 1, 2002		
Trench and Wiring (City)	December 1, 2002	$6,000 (City)	$6,000
Installation of Controllers and Flow Meters	December 1, 2002 to March 1, 2003	$282,700	$282,700
Staff Training	March 1, 2003	$2,000 (City)	$290,700
Quarterly Data Review	June 1, 2003		
Quarterly Data Review	September 1, 2003		
Quarterly Data Review	December 1, 2003		
Annual Program Review	March 1, 2003		

Project Location	Acres	Project Location	Acres
Buchanan Park	16	Oak Hills Park	5
City Park	28	Hillsdale Park	3.5
Central Park	8	Stoneman South	2
Linear Park	11	Stoneman North	8
Central Harbor Park	1.5	Highlands Park	4.5
Marina Center	2.7	Woodland Hills	2.4
Riverview Park	4	Marina Park	15
California Seasons	2.5	City Hall	6
De Anza Park	3.5	Small World Park	8
Marina Walk	1.7		

1. Monitoring and Assessment

The Director of Public Services with Park Maintenance supervisory staff will oversee the contract bid and award process, and oversee the installation project. While each of the 19 sites is important to the project, priority will be given to Buchanan Park and City Park - Pittsburg's most heavily used parks and ballfields. Beginning the installation project with these two sites will ensure the project will be complete at the earliest possible date. For all other sites, installation work is anticipated to be completed prior to March 1. Historically, peak season for parks in this city occurs after this date.

Current City personnel shall perform trenching and wiring and other site preparation work. Contractor shall provide equipment installation, operation, programming and staff training.

Training of staff shall occur concurrently with the final phases of installation.

At the end of each quarter of this project (March/June/September/December 2002) park maintenance supervisory staff will review all available data for volume of water used, number of customer complaints, and perform a review of the effectiveness of the automated system.

At the end of the first year, and each year afterward, park maintenance supervisory staff will review all available data from the irrigation automated system and develop such changes that are deemed necessary to improve the system's effectiveness. Data to be included in this process shall include volumes of water used for irrigation per site and program-wide, conservation measures, turf management measures to reduce runoff and watering, and other factors.

2. Preliminary Plans and Specifications - Bid Information Attached

C. Qualifications of the Applicant

Summary of Skills and Qualifications

Public Services Supervisor Roger Stromgren will act as Project Manager and will be directly involved in the contract, bid, bid award and installation portions of Irrigation Automation Project. He will also undergo the most extensive training on the monitoring and maintenance of the system, and supervises other employees enrolled in the training program. Mr. Stromgren will be responsible for the day-to-day monitoring of the system, adjustments, as well as quarterly and annual reviews.

Mr. Stromgren holds an Associate's degree in Business Management, and is a Certified Water Auditor (California Polytechnic Institute, in cooperation with the Irrigation Association, Fairfax VA.) He has received specialized training as Pittsburg's Water Auditor, specializing in residential water audits. He has 14 years experience in landscaping and turf management, and holds a C-27 Contractors License, Pesticide Applicators License and has attended water budgeting seminars.

Public Services Supervisor Donald Buchanan is Mr. Stromgren's direct supervisor and will also be involved in the contract, bid, bid award and installation portions of Irrigation Automation Project. He will also undergo the training on the monitoring and maintenance of the system, and oversee Mr. Stromgren's day-to-day management of its functions.

Mr. Buchanan holds a Bachelors Degree in Recreation and Park Administration, and in 1991 was certified as a Master Gardener. He, too, holds a Pesticide Applicators License and has active memberships with a number of local horticulture, environmental and parks associations. Acting in a supervisory capacity over Pittsburg's parks since 1979, Mr. Buchanan currently oversees a crew of 38, and is responsible for developing and monitoring a budget in excess of $1.7 million for landscape maintenance.

External Cooperator

Tony Yarish, District Manager for United Green Tech of Pacheco, Calif. holds a C-27 license and is a member of the American Society of Irrigation Consultants. As a landscape and conservation consultant for this project, he has provided substantive technical assistance regarding the Rainmaster Central Control Irrigation System. United Green Tech has been in business for 13 years and has 25 employees.

Mr. Yarish will manage the installation project and oversee two years of system support after the equipment is operational. These services shall include: Strategic System Planning for efficiency, conservation and runoff reduction; on-site service on all equipment; computer support for system software and hardware training; installation of software upgrades; ongoing staff training as needed; notification and attendance for city personnel at annual regional training seminars to update, training, answer questions and network with other system users; technical support for the irrigation system.

D. Benefits and Costs

1. Budget Breakdown and Justification (Excel Spreadsheet attached)

The budget for the Irrigation Automation Project does not include land purchase or easement costs as all work shall be performed on land already owned and maintained by the City of Pittsburg (applicant).

Some engineering services may be necessary but are not anticipated at this time. City engineers are available for this purpose, and the City shall provide these services as an in-kind contribution of $75 per hour.

Materials and Installation of the automation equipment is the primary expense for this project, and has been estimated by a local experienced, certified and reputable contractor at $256,699 (equipment: $207,528, tax $15,046, contractor labor $34,125) Addition of a 10 percent contingency increases the projected cost to $282,700.

Additional services for trenching valued at $6,000 shall be provided by the City. Training expenses of $2,000 shall be provided by the City.

No structures are involved in the project as proposed. No additional equipment purchases or rentals are anticipated. Environmental mitigation/enhancement expenses are not anticipated as this is the replacement/upgrade of an existing system. Administration and overhead costs not already included in the above figures shall be paid by the City (applicant). No project, legal or license fees are anticipated.

2. Cost Sharing

The City of Pittsburg has allocated $1,725,438 for landscape maintenance costs for FY 2001-2002. This is expected to increase to $1,897,982 for FY 2002-2003, upon approval of the Pittsburg City Council in May 2002.

Within these funds are cost shares for project supervision, grant and program administration, staff equipment, vehicles and materials directly related to the installation of the automated system. In addition, the City shall provide ongoing monitoring and maintenance of the system, ongoing staff training to supplement training included within this grant, and periodic (no less than quarterly) data review and recommendation for conservation purposes.

3. Benefit Summary and Breakdown

Expected project outcomes

The City of Pittsburg expects this project will accomplish the following:

1. Enable measurement and monitoring of irrigation at 19 of the City's most heavily utilized and highly visible parks and landscaped areas
2. Improved training for personnel in conservation measures
3. Reduce the use of treated water for irrigation (avoided cost benefit estimated at $37,426 per year)
4. Reduce runoff of irrigation water into storm drains and the Delta
5. Automate the system to make more efficient the adjustment for climactic conditions, such as wind, rain and temperature fluctuations (avoided cost benefit estimated at $16,674 per year)
6. Detect unscheduled flows and shut down the system through the master valve

For those expected outcomes that are not quantifiable, (#1, #2, #4 and #6) each links directly or indirectly with a goal of the CALFED Bay-Delta Program.

The mission statement of the CALFED effort reads in part ". . . restore ecological health and improve water management for beneficial uses of the Bay-Delta System"[5]

#1 and #2 begin with the basics: the training of staff in conservation measures and its significance to the park system, the community, the Bay-Delta and the environment in general, and a system for measuring and monitoring the use of treated water. Together, these will turn the focus to reducing the use (and eliminating the over-use) of this valuable resource. Previously, this was impossible to pursue adequately with no accurate way to measure or monitor irrigation practices beyond tracking of consumer complaints about turf conditions.

CALFED's primary objectives include improving and increasing aquatic and terrestrial habitats and improving ecological functions in the Bay-Delta. Decreasing runoff contributes directly to the overall health and improvement of the ecology of the Delta. Reducing pollutants flowing through these important habitats is a stated objective for the Environmental Protection Agency, Regional Quality Control Board, Contra Costa Water District (raw water supplier) and is #4 and #6 anticipated outcome for this project of the City of Pittsburg. Elimination of over-watering and quick detection of system leaks to speed their repair are not quantifiable, but link directly to CALFED goals as a qualifiable result of this project.

[5] CALFED Bay-Delta Program Mission Statement

4. Assessment of Costs and Benefits

Major Assumptions:

1. It is assumed the City of Pittsburg shall continue to maintain its parks, medians and landscape areas.
2. It is assumed the City of Pittsburg shall continue to provide treated water to the parks maintenance division for irrigation.
3. It is assumed the cost to the City for treated water shall remain at or near $2,793 per million gallons.
4. It is assumed labor costs shall remain at or near present levels during the 12 months of the project.
5. It is assumed that like all capital projects, the automated system will last for a minimum of 7 years.

The expected outcomes of this project are: water savings of 20%, or 13.4 million gallons in the first year ($37,426 in water costs saved), plus avoidance of $16,674 in labor costs.

This $54,100 in avoided annual cost benefit for the City over a seven-year minimum life of the system totals $378,700.

The cost of this project is estimated at $290,700. The City will provide in-kind services such as staff training ($2,000), trenching ($6,000), supply contract management, supervision, staff overhead and the cost of monitoring and maintaining the system after installation. The amount requested in this application is $282,700.

Benefits/Project Costs = >1

7 year benefit: $378,700 / Project Cost: $290,700 = 1.302

This project is locally cost-effective.

E. Outreach, Community Involvement and Acceptance

Applicant has coordinated its application with the City's Water Conservation Coordinator and other municipal turf maintenance organizations seeking a similar goal: conserving water and reducing runoff.

Once the system is installed and operational, the City will notify its water customers of the additional controls on water use as part of its overall water conservation information effort. This effort includes posting on the City's website and information in water bills and a newsletter mailed to every home in the city.

Information on the automated system will also be presented by the Water Conservation Coordinator or his designee to large landscape water customers of the City water system.

Applicant estimates no fewer than five current employees will receive training in the operation of the automated system, and five staff members will receive additional training on water conservation measures through their work with the City of Pittsburg's Park and Landscape Maintenance divisions. Water conservation information, including methods and implementation, will be included in the curriculum of the weekly employee training program.

Applicant anticipates the project will expand the duties and opportunities of 10 current staff members. It is not anticipated that new jobs will be created by the addition of this automated control system.

Irrigation Automation Project Budget : FY 02-03 FY 03-04

Land Purchase / Easement	0
Planning/ Design/Engineering ($75 per hr)	
Materials / Installation	
Force Account Labor	6000
Contract Labor	34125
Structures	0
Equipment Purchases/Rentals	222575
Contingency - 10%	26000
Environmental Mitigation/Enhancement	0
Construction	
Administration	0
Staff Training	2000
Overhead	
License and Permit Fees	
Total	290700

City of Pittsburg
Roger Stromgren (925) 252-4000